

WRITING ABOUT WRITING: Ideas for Short Report and Journal Article Composition

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Abstract¹

Introduction: In this report I model effective report writing structure and content whilst discussing these and other important writing issues. I start with this single paragraph but formally structured² Abstract which properly contains elements of 'introduction', 'methodology', 'findings' (i.e. a combination of results and discussion) and 'conclusion'.

Methodology: I draw on personal opinion from experience as an academic as well as published guides and literature on writing, especially journal articles (i.e. themselves short reports).

Findings: Key suggestions are to develop a main message tailored to the identified audience through a story-telling approach which comprises a 'stand-alone' document that can be comprehended by a lay-person. Creating well structured and balanced sections each with descriptive headings and attractively laid out and presented improves transmission of important content. Careful and convincing use of references is vital in argument construction and ensuring credibility. While this report may serve as a useful writing template, effective writing requires practice and revision and the art of good writing is a lifelong pursuit.

Conclusion: I demonstrate that creative writing can be produced whilst simultaneously adhering to the guidance I advocate.

*Keywords*³: report writing, effective communication, writing skills, writing journal manuscripts

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¹ Abstract is the standard terminology used within journal articles; a professional report might use Executive Summary instead, however, the content and format would otherwise be equivalent.

² Not all journals require formally structured abstracts (i.e. with headings for each component of the text) and the specific headings used vary from journal to journal. I have adopted my own preferred headings/structure here. To ensure that an abstract (or Executive Summary) contains all of the critical ingredients in the appropriate sequence, and because in my experience abstract writing is the single most difficult aspect of professional writing, I strongly encourage report and journal article authors to adopt a structured approach to abstract writing (the headings can be removed when manuscripts are submitted to a journal that does not require such an approach).

³ The author of a journal article normally provides 3-4 keywords of direct relevance to the topic discussed in the article and to the mission of the journal.

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Preamble⁴

This report evolved from an earlier work entitled: 'An Essay on Essay Writing' that I first developed in 1994 whilst working as an academic in the College of Arts and Sciences at the University of Notre Dame Australia. Each year since then I have made this work available to my course-work and postgraduate research students as a guide to report writing as well as a way of indicating my expectations for written work submitted to me for assessment or feedback. It has been periodically updated and amended with a switch from 'essay writing' to 'report writing' occurring in 2009 and the switch to 'writing about writing' occurring in 2011. Being initially aimed at university course-work students I have framed this work along the lines of a kind of university assignment; specifically I set myself the following task: *Write an engaging short report that itself demonstrates effective report writing skills. The report should comprise 12 pages of main text plus all of the hallmarks of a professional or scientific report including title page, abstract and table of contents.* Irrespective of this framing, it is intended, or at least hoped, to be of some use to anyone interested in improving professional writing skills.

⁴ This Preamble serves to place this report in its broader history and context. A Preamble provides useful or interesting but non-essential content (i.e. removal of the Preamble would not impact on the overall purpose of the written work or of attainment of that purpose). Students are not normally expected to include a Preamble to written work submitted for assessment.

Writing About Writing: Ideas for Short Report and Journal Article Composition

1. Introduction

Effective writing is vital to success as a professional and this is particularly the case when writing short reports such as university assignments and journal articles as well as longer items such as government, industry or consultant reports in the environment and sustainability fields in which I work. My personal mantra is: 'you are only as good as your communication' whether that be oral or written. Report writing provides an opportunity to create an enduring legacy for expressing personal and professional knowledge and views in order to communicate with others. To ensure that written work is actually read by another person, it is essential to develop effective report writing skills. By effective I mean both creative (i.e. engaging to the reader) and containing convincing content.

In a time of information overload (e.g. Hurst 2007), a report should be short and succinct because seemingly no one has the time to read long documents (Miller and Lehr 2007). But as Mark Twain (1835-1910) allegedly said: "I didn't have time to write a short letter, so I wrote a long one instead"⁵. It is far more challenging to write a short report compared to a long and rambling or 'waffly' work when both contain the same points (Arceci 2004) and Blaxter et al (2006, p228) note it is a task that requires much drafting and re-drafting. In other words 'less is more'; writing a short report demands considerable skill and effort. So, what can authors do to improve their report writing skills?

In this report I model what I consider to be important report writing skills and content. My primary purpose is to help my reader understand how to create an effective professional report or journal article. To demonstrate the most important writing skills explicitly, I present this report in keeping with my preferred approach. In each section, I provide explanations of the skills I employ. Many of the other works cited in this reports adopt a similar approach in relation to specific aspects of writing but nothing I have found in the published literature specifically and explicitly models and explains each aspect of writing in the manner I have adopted. By modelling what I consider to be effective writing skills in this way, this report may potentially serve as a template for aspiring writers.

To be consistent with my stated purpose in the previous paragraph, at this stage I should point out that an Introduction should clearly set out the *purpose and scope* of the report content. In terms of scope, the next section outlines my methodology, while the main findings or discussion of my report (Sections 3-6) begins with issues to resolve when starting a writing activity concerning main message, audience, story-telling and voice including the concept of creating a 'stand-alone' piece of work. I then address the issue of structure in terms of the use of headings, the importance of balance and attractive presentation. Referencing and credibility in argument development and more general thoughts for improving writing skills and the art and science of writing follow. I do not discuss basic issues such as spelling and grammar as I assume that all professional writing would scrupulously comply here. I conclude with recommendations for effective writing and a personal vision for the future of professional report writing and journal article composition.

2. Methodology and approach

Having a description of methodology in a scientific or professional report is critically important (Arceci 2004) which should provide all the important step in the correct sequence for performing whatever study or investigation it was that a researcher undertakes (e.g. Provenzale 2007). An analogy is often made between the description of methods and a recipe for cooking in that it must be precise and succinct but sufficient to enable any future investigator to replicate a study (Cetin and Hackman 2006, Kalpakjian and Meade 2008), hence no ingredients or steps in the 'cooking' process should be left out (Provenzale 2007). A vital component of any report that is closely

⁵ source: http://www.famousquotes.com/show.php?_id=1045873, accessed 29 January 2011 - note: this quote is attributed to Blaise Pascal here rather than Mark Twain

related to methodological approach is to acknowledge the limitations of the study and the extent to which the findings can be generalised (e.g. Arceci 2004, Provenzale 2007, Kalpakjian and Meade 2008). Limitations are not an admission of defeat as Lambie et al (2008) point out; there are no perfect studies - they all have limitations to some extent. It is important to be honest and acknowledge both the limitations of a particular study or report as well as the useful contributions it makes. Often the limitations are intrinsically linked to the methodology employed as a researcher can only obtain information or results in accordance with how they carried out their study. The complexity of methods varies according to the nature of the investigation; in the case of this report my methodology was simple and straightforward.

In preparing this report, I drew upon the well established literature devoted to writing skills as well as personal views derived from over 20 years as an academic including recent experience as an editor of an international journal⁶. As Bloomberg and Volpe (2008) note, a literature review is research in and of itself that is employed to understand previous research related to a topic. The available literature on writing skills is massive and includes hundreds of books alone, as well as journal articles, websites and other sources. I did not attempt to review items from across the entire field in equal measure, but focused my efforts on journal articles (especially those published in the last decade). This is because I am modelling writing skills for short reports and journal articles are the principle form these take in the formal published literature.

With respect to content and potential limitations of this report, the topics I discuss are those I personally believe to be most important derived from personal experience. However, I found most of my own views to be already well established in published sources and thus cite them accordingly to support my argument; this accords with Reardon's (2006, p151) notion of a literature review as a demonstration vehicle on a research topic. Matters and advice concerning effective report writing are common across many disciplines, as a scan of the titles of journals cited in this report attest; thus there is no unique characteristic or practice of report writing that specifically applies to the environment and sustainability fields in which I normally work.

The sections that follow represent the traditional 'results' and 'discussion' aspect of this report in which the main content or development of 'argument' is provided. However I have chosen not to use this terminology but rather arrange and present information under more descriptive headings based upon themes and topics I identified in the literature that I reviewed.

3. Getting started: message, audience, story-telling and voice

Suffering from writer's block is common to all writers at some stage seemingly no matter how experienced they are. Often it is a simply matter of getting started that breaks the deadlock and creates momentum to carry the writing process onwards to completion of a report or article. Kalpakjian and Meade (2008) note that there is no single formula for what to do first but having a plan is essential; similarly Kearns and Gardiner (2011) suggest setting a time or deadline. One way of planning writing suggested by Arceci (2004) is to lay out figures and tables (i.e. core information or data sets) and once this is done "many papers will start to write themselves". If it is too daunting to write the entire report, then decide to write only a section at a time. Driscoll and Driscoll (2002) suggest the best place to start is to write about something already known about or familiar to the author. Ultimately, of course, the order of writing is not as important as getting it written (Arceci 2004) and Gardiner and Kearns (2011) strongly advocate writing 'before you are ready' on the basis that it is all too easy to procrastinate on writing activity (see also Kearns and Gardiner 2011 on other ways to overcome procrastination).

No matter how a writer gets motivated to commence actually writing there are some very important things to get straight right from the outset:

- main messages - knowing what it is the writer wants to say;

⁶ Each year I mark hundreds of short reports prepared by university students and review scores of journal article submissions.

- audience - determining who the report is being written for (Who is expected to read the report?);
- story-line and content - creating a stand-alone piece of work that tells a coherent story; and
- voice - deciding how it is that the writer will engage with the subject and their reader.

These matters are addressed in turn.

3.1 Asserting the main message

Reports are easier to write and easier to read if they focus on a main message; or what Cahill (et al 2011) refer to as 'finding the pitch'. From an author's perspective the main message is the reason for wanting to write in the first place, while for the reader it is the key point of interest. If the author's intended message is easily conveyed to and understood by the reader then it is an effective piece of writing (Saver 2006 cited in McIntyre 2007). Conversely writing that presents a mixed message with one part of the message out of synchronicity with the other parts creates doubt about the sincerity or believability of the author (Light 1998). It also suggests that the writer may be confused and they probably found the writing process itself to be difficult as a consequence.

The importance of having a main message is something that Brown et al (1993) simultaneously models and emphasises in their journal article on this topic. They maintain that the main message should appear at least four times in a written work commencing with the title and thereafter within the abstract or executive summary, introduction and discussion sections. Minto (1998a) similarly stresses the importance of the main message in writing and advocates that a summary of the entire message of the report should be provided to the reader in the first thirty seconds of reading meaning that the title and introduction play a vital role. To find the main message requires considerable work on behalf of the author in terms of clearly and fully thinking through all the ideas carefully and Minto (1998b) provides specific guidance to authors on how to approach this.

Having a working title of the report that conveys the key message provides a useful grounding throughout the writing process. The working title plays a key role in keeping a writer focused when researching and writing on the topic. Similarly, in the final 'published' version the title will influence the reader's decision to read the report (Alexandrov and Hennerici 2007, McIntyre 2007) and arguably as Carraway (2006) maintains, the title is the "single most critical item" because it is the first point of engagement with an audience so tying it to the main message is essential. The main message should also of course appear for the final time at the very end of a report as part of the conclusions, so that the reader finishes reading with the main message first and foremost in their mind.

3.2 Writing for the right audience

identifying the right audience is equally one of the most vital aspects of effective writing and it is closely related to the main messages of a report. For example McIntyre (2007) suggests that before writing a journal article, an author should select the journal best suited to that work and the writer's message, and is easily accessible to the readership the writer seeks to influence. A similar sentiment can be extended to any report writing. Miller and Lehr (2007) assert that the "reader reigns supreme" in that writing is always about the readers and their needs, thus the main message must be important to them; Cahill (et al 2008, p198) similarly state that: 'an effective pitch is tailored to your audience'.

With respect to the writing process Hattersley (1998) suggests that having defined the message to be conveyed a writer should turn to audience analysis to determine how to develop it while Brown et al (1993) advocate starting the writing process by first identifying by name 3-4 specific individuals the writer wants to read that paper and then determine the main message so as to ensure that the writing is tailored to the needs of the audience. Identifying individuals should help to clarify exactly what to then write about. However this approach might make professional writing too specialised and Arceci (2004) suggests that the background or context section of a report should equally convince experts in the field as well as fill in knowledge gaps for the interested, but less expert readers. Advice from editors canvassed by Powell (2010) suggests that most writers make the mistake of assuming too much knowledge on the part of their audience and that writing

for the most adversarial or sceptical reader is a useful approach to adopt so as to substantiate the veracity of the arguments advanced.

Thus when writing a report, follow the advice of Kalpakjian and Meade (2008) and first consider: Who will the reader be? or Who is the intended audience? My advice is not to fall into the trap of writing for a professional with the same education and specialist knowledge as yourself but rather write for a lay-person. Such an audience encourages clear and simple writing. Dixon (2001) states that "a paper is well written if a reader who is not involved in the work can understand every single sentence in the paper". While journal articles might mostly be read by specialists in the field this is not a given in a world in which information is increasingly available electronically and the chances are a professional report will end up on a website in the public domain (as is especially the case for environmental and sustainability reports which are often subject to public review). When considering the general public (in a developed country like Australia) it can more or less be guaranteed that they would have attended at least 10 years of schooling. I suggest that this is the only assumption a writer can or should reasonably make about their audience. If writing for the comprehension and English skill level expected of a Year 10 school graduate, the resulting report will be (or should be) understood by any person who reads it. (In a previous iteration of this work, I cheekily referred to this approach as 'idiot-proofing' writing).

When writing for a lay-person, do not use jargon or acronyms and technical terms unless they really are the most appropriate words to employ and each is carefully explained the first time they are used. Baron (2007) urges writers to cut the jargon altogether because when it is time to communicate 'to the masses' writers need to translate jargon and other concepts used by specialists into 'Plain English' and provide a context to help general public readers understand; she acknowledges that this takes some work, but the payoff makes it worth the effort. This does not mean that each line of a work must be made with all words of just one sound each; there is no need to dumb things down (like I just did)! Be creative and be expressive (but remember that 'sesquipedalianism obfuscates pellucidity'⁷!).

Choosing the right audience may help a writer get started with actual writing. For example, it has been suggested by Nightingale (1986, p15) that writing for a different audience (e.g. a stranger and Year 10 school graduate) is less stressful for the writer who otherwise may feel threatened by having to write for an experienced learned authority. An additional advantage of writing for this audience noted by Murray (2006, p209) is that it requires the writer to lead the reader through the work in logical and progressive steps that are well signposted. In other words, a reader should always be able to clearly understand where they are in the report and where they are going. An example of providing guidance to a reader is the use of connecting or transitional sentences (Lambie et al 2008) that serve to link one paragraph and section of a report to another such as: 'In the next section I address the issue of story-telling and how to create a 'stand-alone' document'.

3.3 Story-telling: creating a 'stand-alone' work

I am strongly of the view that a report (or any other piece of written work for that matter) should be presented as a 'stand-alone' document on the subject or topic that it addresses. Minto (1998a) suggests that the most efficient way to engage readers with the content is to tell a story because this guarantees that a reader will pay attention to what the writer says. Powell (2010) similarly uses the phrase 'research story' in relation to journal article writing while Cahill (et al 2011, p196) state that the most important skill for 'writing with pitch' is 'having a story and not deviating from the narrative'. Every good story has a beginning and middle and an end meaning that it "establishes a situation, introduces a complication that leads to a question, and then offers a resolution or answer" (Minto 1998a) The lure of an unfinished story is what Minto (1998a) argues compels readers to read to the end of a report where resolution should be provided.

⁷ This quote was taken from the website: <http://mscomposts.wordpress.com/2009/03/16/sesquipedalianism-obfuscates-pellucidity/> [accessed 24July2012]. For a highly enjoyable account of clear writing (and thinking) see Walter Murdoch's essay 'Sesquipedalianism' from the 1930s in: Salusinszky I (ed) 2011 *On Rabbits, Morality, etc. – Selected Writings of Walter Murdoch*, UWA Press, Crawley, Western Australia.

Creating a stand-alone document means that any stranger to the topic can understand exactly what it is all about just by reading it. This process starts by providing an engaging title for the work that is dynamic and informative (Alexandrov and Hennerici 2007) and captures the main message as previously discussed. Creating a 'stand-alone' document is easily achieved by providing an introduction much like the one outlined previously which clearly defines the purpose and scope of the report, as well as a discussion section that delivers the content promised in the introduction (nothing more and nothing less). Of course that introduction must be directly related to the title of the written work, as also is the case for all sections of the report thereafter. Indeed Kliever (2005, p592) argues that the: "The first sentence of the first paragraph should pick up some or most of the words from the title"; something I strongly agree with and have attempted to model in this work.

Overall there should be a sense of the story unfolding as the reader works their way through a report section by section. At the paragraph level within sections, Osland (et al 1991, p109) note that it is also important to create internal coherence or 'unity' by only including relevant material to the paragraph topic and avoiding ambiguity or contradiction; thus each paragraph itself is a small 'story' within the greater work.

3.4 Finding the right writing voice

The tone or 'voice' that a writer adopts in writing has direct impact on its communication effectiveness. Each author has their own style of course and it is vital that this is the case, because reading would become very dull indeed if all writing was identical in tone or style. However there are two particular issues concerning voice that a writer should consider: passive vs active voice and first vs third person writing.

Using an active rather than passive voice has seemingly unanimous support by authors writing about writing (e.g. Carraway 2006, Cetin and Hackman 2006, Baron 2007, Lambie et al 2008, Sigel 2009). Active voice clearly identifies who acted, what the action was, and who received the action in that sequence (Lambie et al 2008) while the passive voice generally puts the object first and often leaves the subject out altogether. Sigel (2009) points out that use of passive voice is a stylistic issue that pertains to clarity, it is not grammatically incorrect, but argues that use of the passive voice 'bogs down the narrative... and makes for imprecise arguments'. Writing in first person is one way to maintain an active voice rather than third person (which can be either active or passive).

Personally, I prefer to write mainly in first person. I find it easier to communicate this way as it is more direct and uses fewer words than third person. In between, of course, is second person which Baron (2007) promotes on the basis that writing about 'you' is friendly and inviting and is conversational; personally I avoid this approach because it is rarely clear exactly who is meant to be represented by 'you' or 'we' or 'us'⁸. Third person writing is detached as though the writer were just observers of the world separate from what it is they are writing about; it is a style that says in the words of Brown et al (1993): "'I am here, but I am not really here', our words become colourless and flat and give readers little incentive to read them". Tredinnick (2008) exhorts writers to write as they speak (meaning in first person voice of course); however in a section entitled 'Question everything they taught you at school' (p26-27), he argues that : "we get told the opposite so early and so often; we get drummed out of us the one piece of wisdom that would help each of us write" and that:

We learn, at home, on our way through school, and then at work, that writing is supposed to be different from speaking — less personal, less plain, more circumspect, more polysyllabic, smarter, more proper all round. We learn to mistrust the way we'd say it well. This all began the day someone told you to use the passive voice when expressing conclusions in an essay. When they told you never to write "I" in your history and science papers — in any papers at all. ... It's the day you learn that you don't belong anymore in your writing.

In a similar vein Maddox (1983) and Carraway (2006) argue that scientists need to be willing to take responsibility for the content of their writing by writing in first person. Thus the writing becomes more engaging and persuasive.

⁸ I note that many of the author's I have quoted in this report employ second person voice in their writing.

With respect to university students Hamill (1999) expresses concern at the 'writing gymnastics' that many undergraduates go through when attempting to write an academic essay or report using third person suggesting that they have erroneously been advised that good academic writing avoids using 'I', 'we', or 'our' which then results in "tortuous and repetitive" passive alternatives such as 'the author'. The use of third person writing, especially in science disciplines, is likely tied to an expectation that scientific arguments should be based on evidence rather than the subjective likes or dislikes of individual authors. But arguably any written work (and the research activity that underpinned it) is a product of the author's personal interests and design. I encourage my students to take direct responsibility for their research and writing, and writing in first person is not only a powerful way to acknowledge this but also is somehow a more 'honest' way to write. There are other advantages to be gained from first person writing identified by Hamill (1999) including development of personal and professional qualities of self-awareness, reflection and critique. I suggest that the integration of these with evidence-based analysis creates more powerful, insightful and engaging writing.

While active voice is widely supported for report writing, the position on use of first or second person is not so clear-cut. With respect to the university situation Hamill (1999) notes that students may be fearful of responding to assignment advice given by individual academics if the message from the entire faculty is not consistent. In the case of academic journals there may be specific writing style requirements expected or imposed on authors. From the point of view of effective writing, I encourage authors to check the wants or needs of their identified audience carefully before commencing report writing so that an appropriate voice can be adopted at the outset and used consistently throughout the writing process.

Having now covered the starting points for effective writing with respect to the main message, audience, story crafting and voice, report structure is the next important issue I consider.

4. Structuring a report

A report should be well structured with consideration given to use of headings, balance and presentation. Petelin & Durham (1992, p59) advise that structure is very important and it assists both writers and readers alike. I strongly advocate the use of numbering for headings – a quick glance at a Table of Contents containing numbered section headings is sufficient to understand and 'test' the structure of a report. The content of headings and the sequence of topics discussed in individual paragraphs and sections of a report should be consistent; for example, in the words of Cahill (et al 2008, p202): 'Do not swap the order, such that if you list questions 1, 2, 3 in the introduction, do not discuss the methods as 3, 1, 2'. Ultimately how structure is handled is part of the storytelling process itself (Canter and Fairbairn 2006, p74) and it can (and perhaps should) be a creative aspect of a particular piece of writing, not a static or uniform approach applied equally to all reports.

4.1 Using headings effectively

Headings are used to break up the sections in long documents signalling to the reader where one section ends and the next one begins and allowing the information or thinking within a report to be presented in logical 'chunks' or 'bite-sized pieces'. Minto (1998b) argues that a section implies a pyramidal hierarchy of ideas in which sentences are grouped together to form paragraphs and these together form sections all of which lead 'upward' to a single summary point which therefore should be captured in the heading text itself. Like the title of a report, section headings can be used to engage the attention of the reader.

The most well-known scientific reporting structure is known as IMRAD – with section headings delineating the Introduction, Methods, Results and Discussion elements of a report notwithstanding that individual journals may have slight variations on these (Kalpakjian and Meade 2008). To the basic section headings of IMRAD there is also need to provide separate entries for Abstract, Conclusion and References. Of course for creative purposes, making use of descriptive section headings is preferable to the minimalistic IMRAD headings providing they serve the equivalent

functions (Denscombe 2007, p318) as I personally prefer and am modelling in this report. Some authors object to the use of predefined headings which the IMRAD approach encourages. For example Minto (1998a) writes that:

corporations and consulting firms write the dullest documents in the world, primarily because they organise around predefined headings (such as Findings or Objectives) rather than around a compelling message. The better way is to formulate the message first, and then word the headings to match.

For long or complex works, sub-headings should be used where appropriate, although Commonwealth of Australia (1994, p242) cautions against excessive heading use (e.g. avoid ending up with the separate headings for each paragraph). The act of dividing up a report in this way and numbering the sections makes it easier to structure and balance for the author and as a means for providing focus for the reader (Petelin & Durham 1992, p62). The sub-headings in consecutive sections of a report (e.g. within the methods and results or results and discussion sections) are particularly effective if they match as it makes for a logical flow in the report that enables the reader to move back and forth between corresponding portions (Kliwer 2005, Provenzale 2007).

For smaller pieces of work (e.g. a paragraph answer to a question or an Abstract), it is not necessary to use explicit headings. However, the writing style and structure should automatically assume this role and the IMRAD approach is recommended to be applied to abstract writing since it itself is a summary of the overall report (e.g. Fisher 2005, Kliwer 2005, Alexandrov and Hennerici 2007). Hence I suggest that there should be distinctly identifiable components each dedicated to providing discrete introduction, methodology, results, discussion and conclusion functions, even if, as Day and Gastel (2006, p52) remark, some are only one sentence or less each in length as would usually be the case within an Abstract.

4.2 Maintaining balance

Balance is important in terms of both report content and presentation. I address these in turn⁹.

With respect to balance of content, the level of detail given to specific report components should match the importance of each component. Issues of major significance to the report topic should be covered in some detail (e.g. several paragraphs or pages each) while smaller or sideline issues given only a brief mention (e.g. 1-2 sentences or a single paragraph). Major sections of a report (corresponding to the roles of introduction, discussion and conclusion) should also be in appropriate balance. For example, a 1500 word report (i.e. approximately 5 pages) would normally comprise of a 1-3 paragraph Introduction (maximum of 1 page), 3-4 pages of Discussion and a 1-2 paragraph Conclusion. Clearly, extreme deviations from this pattern, (e.g. a 1 sentence or a 3 page introduction) would be very unbalanced.

With respect to balance of presentation, it is also important to balance the length of individual paragraphs as well as sections. For example, a report may appear unbalanced if long paragraphs (say 10-12 sentences in length) are interspersed with single sentence paragraphs. Generally speaking I would argue that the 'ideal paragraph' would be 3-5 sentences long. However, as Bate & Sharpe (1996, p33) point out, some variation in paragraph length is important to avoid monotony for the reader. Similarly, a minor point being made in a report may not warrant a section heading of its own that places it on an equal footing with the major points being covered. In this instance, a heading such as 'Other Issues' may be appropriate as a way of grouping minor issues to bring them into appropriate 'weight' with major single sections.

4.3 Working towards attractive presentation

Presentation is the responsibility of an author and often is as important as the content itself. For example, think of the elaborate lengths advertisers and manufacturers go to in order to promote or present their goods to consumers; in my view report writing is no different. As Marshall McLuhan famously stated: 'The medium is the message'¹⁰ and Miller and Lehr (2007) note that formatting increases readability and they encourage writers to "make your messages easy on the eye".

⁹ Note how this paragraph differs to most others in terms of 'balance'

¹⁰ e.g. see: http://en.wikipedia.org/wiki/The_medium_is_the_message, accessed 29 January 2011

A report should always be presented as well as possible, i.e. the arrangement of headings, sentences and paragraphs should create maximum readability and visual interest along with appropriate use of tables, figures or boxes. Bate & Sharpe (1996, p42) suggest that like careless spelling, poor presentation can prejudice a reader to assume sloppiness of thought. A simple example of the effects of presentation are demonstrated in Box 1 in which I have presented near-identical text in two ways. Which approach is easier (and more pleasurable) to read?

Box 1 Presentation Matters!: A Comparison of Two Presentation Styles

<p>When talking about presentation issues, there is no need to discriminate between typed and un-typed work. All of my comments about essay presentation are equally applicable to both typed and hand written work. They also apply to essays written under both mid-term assignment and exam conditions.</p> <p>One useful presentation technique is the use of 'dot points' to break up the discussion of a multi-faceted item. Some advantages of 'dot points' include:</p> <ul style="list-style-type: none"> • use of less words; • presentation of ideas or information in a quick and direct fashion, thereby enabling more ground to be covered; and • provision of visual relief for the reader. <p>An important consideration in presentation is to keep paragraphs to a reasonable length (like this one) and to separate them with a blank line. Additional considerations are the provision of an appropriate margin on all sides of the page (e.g. 2cm) and the use of 'left justified' text for typed work.</p> <p>A report with no breaks or margins is the equivalent of a speech delivered in a monotone; i.e. guaranteed to put the reader to sleep! Some useful writing presentation tips are provided in Commonwealth of Australia (1994, pp237-265).</p>	<p>When talking about presentation issues, there is no need to discriminate between typed and un-typed work. All of my comments about essay presentation are equally applicable to both typed and hand written work. They also apply to essays written under both mid-term assignment and exam conditions. One useful presentation technique is the use of 'dot points' to break up the discussion of a multi-faceted item. Some advantages of 'dot points' include: use of less words; presentation of ideas or information in a quick and direct fashion, thereby enabling more ground to be covered; and provision of visual relief for the reader. An important consideration in presentation is to keep paragraphs to a reasonable length (unlike this one) and to separate them with a blank line. Additional considerations are the provision of an appropriate margin on all sides of the page (e.g. 2cm) and the use of 'fully justified' text for typed work. A report with no breaks or margins is the equivalent of a speech delivered in a monotone; i.e. guaranteed to put the reader to sleep! Some useful writing presentation tips are provided in Commonwealth of Australia (1994, pp237-265).</p>
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If making use of tables, figures or boxes it is important that they be introduced or cited in the main text of the report (McIntyre 2007) and also discussed in terms of their meaning. Cetin and Hackman (2006) emphasis that care is necessary to ensure that all symbols employed, for example in figures, are explained in legends or footnotes. Hattersley (1998) stresses that "facts don't speak for themselves" so my personal advice is to never assume that a table, figure or box is self-explanatory; the meaning of them must be explained for the reader, but this should be done in a complementary way as it is inappropriate to repeat or duplicate information presented in a figure in the accompanying text (McIntyre 2007). In the case of Box 1 it is clear that the passage on the left is the better of the two in terms of presentation for all of the reasons discussed in the passage itself (even though it takes up slightly more space).

5. Developing an argument: referencing and credibility

Development of an argument; "giving grounds or reasons for conclusions" (Fisher 1988, p16) is at the core of any report. As discussed previously report writing and the construction of an argument is ultimately a form of 'story telling'. For Lambie et al (2008) one mark of 'scholarly writing' is that all "assertions are documented and supported" meaning that the writer provides evidence for all statements or claims that may be 'reasonably challenged'. Thus referencing the ideas and facts

that inform a written argument gives the report or story credibility. It also provides a 'paper trail' for the reader to follow in order to find out more on the subject. The main goal of referencing is thus to provide a complete, accurate and helpful record of where material came from (Neville 2007, p8). For example, whilst it may be accurate to reference a 500 page document from which information was derived, it is also helpful to the reader to provide the relevant page number for citations within the text, particularly for book citations (Commonwealth of Australia 1994, p149). And of course the information provided in the Reference list must be complete so that the reader can locate or retrieve each work cited (Lambie et al 2008). Specifically this means supplying the:

- author (surname plus initials of all authors of the work);
- date (i.e. year of publication);
- title of work;
- publisher and place of publication (sometime this means providing a journal name and volume details, sometimes this means the name of a book publisher and sometimes the name of an organisation and their relevant website address).

It doesn't matter whether the material is available in hard copy (e.g. journal article, book, report etc.) or electronically (e.g. website or on-line report), the same four components must always be provided.

All sources of information used to write a report must be properly referenced to avoid accusations of plagiarism (Bate & Sharpe 1996, p39). The only exception to this is within the text of an abstract or executive summary where it is not normal practice to cite references (Arceci 2004) but this is not a breach of good writing protocol bearing in mind that an abstract should not include information not contained within the body of the report. An approved and consistent format should always be used for citing references; I personally strongly advocate use of an 'author-date' style for its simplicity and ease of use for writer and reader alike. In summary this system entails always citing the author of the item (or a title if no author is evident) along with the year of publication. I strongly discourage use of footnotes or endnotes for in-text reference citations, notwithstanding that this is normal practice in some journals and disciplines, as they require the reader's attention in two places at once – in my view I believe it is better to keep my reader focused on just one place in my report at any one time and author-date reference citations enable this.

I have personally always found the Commonwealth of Australia (1994) (and its subsequent later editions) to be an excellent guide to the correct procedures for referencing. This document outlines the correct way to reference practically every form of communication (e.g. journals, books, chapters in edited books, legislation, newspaper articles, films, personal communication etc.). It was, however, published prior to the widespread use of electronic communications. For information about 'citations in cyberspace' such try Reddick & King (1996, p72) or Murdoch University (2011) - numerous other excellent guides to referencing are available online (simple internet search will locate many examples). A reference list should always be included at the end of a written work with complete bibliographic entries corresponding exactly to the references cited in the text (see Section 7; Neville 2007). It is not acceptable to list information sources utilised in writing the report in a reference list if these are not actually referenced in the main text itself. The specific protocol or style employed for listing references is not so important (although many journals do require authors to adopt a particular approach) as ensuring completeness and consistency.

How many references should be used? I have no 'hard and fast' answer to this question other than: 'enough to do the topic justice' or to build a convincing and credible argument. Even for a short report like this one, I find it hard to imagine this being possible with anything less than 15 or 20 references.

It is not just the number of references that help give writing credibility but also how they are integrated into the text and line of argument. It takes practice and experience to learn how to engage well with reference sources. Polnac et al (1999, cited in Lambie et al 2008) observed that new writers often struggle to organise and integrate supportive information and citations into their writing. They also flag that writings that analyse and effectively incorporate information from multiple sources are more interesting to read than reports that simply paraphrase or quote information and place citations at the end of each paragraph. I call this the 'plonking' approach to

references and consider it to be unacceptable practice. One final referencing tip provided by Lambie et al (2008) is the it is best to use direct quotations in moderation and my own 'rule of thumb' here is to only to quote particularly strong or interesting phrases as there is little point in quoting mundane text, better to paraphrase that instead. Use of quotation means that the writer is no longer writing in *their own* voice so unless the quote fits appropriately with their own written material then it is better to leave it out and paraphrase with appropriate citations provided instead.

6. Improving writing skills - the art and science of writing

Like most guides to writing, this report has covered many ideas and topics in discrete steps. In this final section my aim is to step back from individual details to consider the bigger picture and consider how the ideas I have presented might be used in practice to improve writing skills. I also reflect on the art and science of writing before discussing the role of a conclusion.

In introducing this report I indicated that it might serve as a writing template for university students and postgraduate researchers. Using a template, such as a previous report published on a similar topic or taken from the target journal that an author is aiming to publish in, is a frequently mentioned writing technique (e.g. McIntyre 2007, Kalpakjian and Meade 2008, Powell 2010). For teaching writing skills to university students Tomaska (2007) gets students to rewrite a previously published work. Lambie et al (2008) provide an example of a scholarly writing guideline comprising a mixture of guidance to individual sections of a report as well as questions relating to issues such as flow and continuity, clarity and readability. Similarly but in a more prescriptive approach, Kliever (2005) suggests that writing a research paper is largely formulaic and provides a paragraph by paragraph (18 in total) guide grouped in the IMRAD format for writing a paper in the field of radiology although this could easily be applied to many other fields. The idea of delineating and counting the number of paragraphs in each section of a report prior to writing to compile a report writing template is also discussed by Powell (2010). However I draw attention to the wisdom of Brown et al (1993) who state that in terms of good writing "there are guidelines but no rules". Writers must find their own way with what works for them personally.

Advice for improving writing that is seemingly common to all writers on the subject is that good writing always requires re-writing. For example the advice received by Powell (2010) from prolific authors and journal editors is to "revise and revise and revise" once a first draft is completed noting that even polished authors go through an average of 10-12 drafts, and sometimes as many as 30. Carraway (2006) and Powell (2010) both encourage authors to set aside a report for a period of days or weeks once an entire draft is completed before reading with 'fresh eyes' to catch mistakes or problems in flow. They both also advocate reading the manuscript aloud as this provides an opportunity to hear the report as another person would read it, enabling errors and clumsy composition to become self-evident.

Having colleagues or other people not directly involved in the research or reporting activity review writing and using these comments to inform the next draft is also widely supported (e.g. Arceci 2004, Fisher 2005, Kalpakjian and Meade 2008, McIntyre 2007). Some of the benefits of the formal independent peer review process employed by most scientific journals should arise from getting colleagues to review written work. For example Weil (2004) suggests reviewers can be useful to authors by identifying and helping rectify errors or omissions arising from the inevitable limitations of knowledge or experience individuals bring to research and writing, and in providing a fresh perspective on written work reviewers can often identify problems or limitations of which the author is no longer aware.

Effective writing is not just about the nature of the structure and content of a report but equally how that content is communicated to the reader, and this relates to the art of writing itself. From the point of view of a reader, a report is well written if it reads effortlessly. For such cases, Kalpakjian and Meade (2008) write: "This is both a tangible quality that reflects the science of writing and an intangible quality that reflects the art of writing". Brown et al (1993) note that researchers and writers are all human beings with feelings and emotions that influence their work and provide "the

window through which we communicate with others". In a similar vein Kalpakjian and Meade (2008) maintain that "good scientific writing is elegant... and can convey the depth of emotionally charged topics... without using emotionally charged language". How each writer engages with their own writing and establishes individual style and skill is naturally highly personal.

In an empirical sense, the art of writing can be linked to the structure and function of the human brain itself in terms of the brain's two hemispheres. The right hemisphere deals with experience and holistic interaction with the world around us, while the left hemisphere, which includes use of language, processes and orders or 're-presents' that worldly information into fragmented entities grouped into classes that a person's logic and intellect can manipulate as specific lines of thought (e.g. McGIlchrist 2009¹¹). When considering effective writing in the context of the left hemisphere alone, written communication must be logical and make sense. However to convey broader understanding effective writing will evoke and provoke a kind of 'higher' meaning in the right hemisphere of the reader's brain. In short effective report writing will meet the requirements of logic and scientific rigour on the one hand whilst also evoking the more poetic workings of the right hemisphere of the brain. Thus there is the double challenge for writers of being both creative and capturing convincing content. This explains why when it comes to writing, every individual will always have room to grow no matter how experienced or professionally senior that person may be; as Baron (2007) notes: learning to write effectively is a "lifelong apprenticeship".

There are many other 'tricks of the trade' for effective writing which are covered in numerous publications on the topic including Murray (2006), Blaxter et al (2006) and Murdoch University (2011). For the sake of brevity I will draw this report to a close with my conclusions. First though, I should point out that the purpose of a Conclusion is to reiterate the main learning points arising from the Discussion component of a report only; no new ideas or material should be introduced at this stage.

7. Conclusions and recommendations for writing effectively

In this report I have demonstrated some of the fundamental writing skills and characteristics that I believe should be incorporated in a professional report or journal article. I make the following recommendations to writers:

- Carefully choose the main message for the writing and ensure that it is tailored to the intended audience and is emphasized in prominent places in the report.
- Adopt a story-telling approach to writing with a clear beginning, middle and end that unfolds smoothly and engages the attention of the reader.
- Write for a lay-person or non-expert and create a 'stand-alone' document through careful construction of an argument using language that a stranger to the topic can understand;
- Provide descriptive headings and sub-headings that are sequentially numbered and are structured in a balanced manner;
- Present written work so as to be as attractive as possible to the reader;
- Correctly use references to ensure that the communicated 'story' or argument has credibility;
- Have someone proofread or critically review the completed writing and/or read it aloud to reveal errors, omissions or ways to improve it prior to submission; and
- Realise that developing skills in the art of writing requires practice and revision and learning over time to achieve both excellent written content and creative expression.

Plenty of room for creativity in writing remains whilst adhering to these recommendations. I believe that good writing enables boundless creativity in terms of exploration of the actual topic and presentation opportunities. It is about making simultaneous improvement in both the art and science of writing. I view the writing skills outlined and modelled in this report as the foundations of effective writing upon which the true creative elements are overlaid. I hope readers find them to be useful in their own writing endeavours!

¹¹ A fascinating short video explaining the roles of each hemisphere of the human brain is available at: http://www.ted.com/talks/jill_bolte_taylor_s_powerful_stroke_of_insight.html (accessed 21 July 2011)

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